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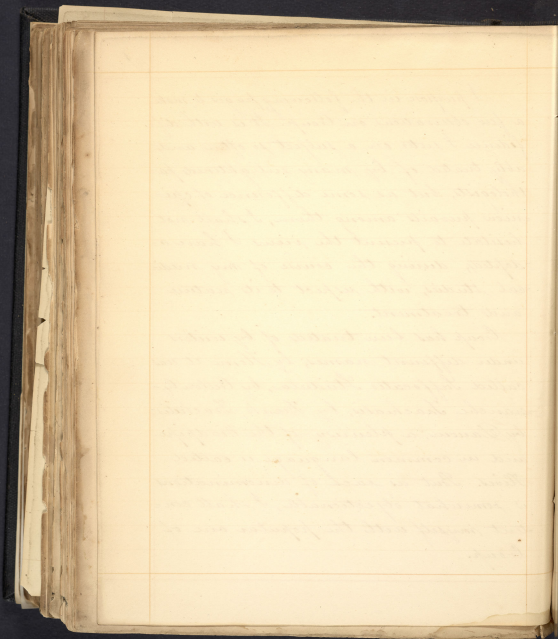
An Essay on Croup  
by  
Wm. Whilldin Sr. of Philadelphia

Apr 2nd 1877

The first of the  
winter season of 1877

I purpose in the following pages to make a few observations on Croup. It is with diffidence I enter on a subject so often and ably treated of by many enlightened pathologists, but as some difference of opinion prevails among them, I shall not hesitate to present the views I have adopted, during the course of my medical studies, with respect to its nature and treatment.

Croup has been treated of by writers under different names; by Horne it was called Suffocatio Stridula, by Cullen, by-  
 spasme Trachealis, by Frank, Tracheitis by Darwin, a pleurisy of the Windpipe and in common language is called Hoars. But as each of denominations is somewhat objectionable, I shall content myself with the popular one of Croup.





This disease is nearly confined to children from the second to the seventh year, rarely occurring after puberty and according to Cullen and others seldom attacking before the period of weaning. Robust children are mostly its subjects and those of the same family are often peculiarly predisposed to it. The time of its appearance is mostly in the Spring during austere damp weather, particularly if it be very changeable. It is met with generally near the sea coast, in some places it appears to be endemical, and has in few instances prevailed as an epidemic. On the subject of its contagious character a great deal has been said by some of the older writers, but the opinion was for many years abandoned, till lately revived by Dr Gregory and other English writers of some

the first of these is a small square of paper  
which is placed in the center of the page  
and is used to hold the paper in place  
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note. By them many cases have been advanced in support of their views, but whether or not the disease must be regarded as contagious, time and further observations must decide. (See N. Am. Med. and Surg. Journal No. 5)

An attack of Croup is very insidious, the little patient being seized without any premonition of its appearance with the violent symptoms indicative of the disease. These are a hoarseness, a rough stridulous cough with a peculiar ringing or harsh noise, compared by some to the barking of a dog, at each inspiration the face is swollen and flushed, and there seems danger of suffocation. The child becomes restless and no change of posture affords him the least relief, in some instances the patient sinks under the violence of

the first of the month, the day was  
very warm and the sun shone  
very brightly. A very fine  
day for the season. The wind  
was from the south and the  
air was very pleasant.  
The water was very clear and  
the fish were very numerous.  
The birds were very noisy and  
the insects were very active.  
The day was very pleasant  
and the weather was very  
fine. The sun was very  
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active.

these symptoms, but mostly the disease runs a more protracted course. Not being relieved we have the evidence of high febrile action, the circulation being accelerated and the disease continuing extends itself to the lungs constituting a case of *Pneumony*.

Taking into view the peculiar symptoms, I have detailed, I cannot agree in subscribing to the common received opinion with respect to the seat of this disease, for whatever have been the notions of physicians with regard to its nature, whether it depends on impacted mucus, inflammation or spasm they have almost uniformly placed it in the trachea X  
According to this belief we should, I believe, be at a loss to account for the barking cough and whizzing noise



of respiration which accompanies this disease. Did it depend on any affection of the trachea either thickening of its lining membrane or spasmodic action of its muscular fibres, these characteristic symptoms of the disease ~~would~~ not I think be produced; for we find the trachea to be a plain circular tube and though its caliber were diminished to one half or even one third of its usual size, we ought not to expect to hear more than a slight wheezing, owing to the rapidity with which the air would have to pass in order to supply the Lungs. 'Tis to the Lungs alone then we are to look for those striking phenomena of this disease. Whether we consider it as a wind or stringed instrument, still all will admit that it is the proper organ of





the voice or in other words that the modulations, which the sound presents as the air passes from the Lungs, depend on the vibrations communicated by it to the thyreo-arytenoid ligaments. Though air be forced thru a tube with the greatest possible rapidity, still we could not in any way produce those modulations without some vibratory motion could be imparted to it. In placing the seat of Croup in the Larynx I do not deny that the Trachea and Bronchia often and indeed in most cases are affected, but I am persuaded that without the Larynx by involved no barking noise will be heard.

Taking all these circumstances into consideration, I think we



would be justified in concluding that the true seat of Croup is in the Larynx, and hence that the names of *Cynanche Trachealis* which it received from Cullen and of *Trachitis* from Frank were founded on erroneous ideas of the subject.

Not is the view I have adopted respecting the seat of Croup founded solely on reasoning and the received opinions respecting the physiology of the voice; for, by a recurrence to the writings of Blaud and Bernuclles, it will be found to be sustained by a very large series of post mortem examinations conducted with the greatest care and apiduity. Passing now to the Pathology of the disease it will only be necessary to remark



that by an attentive consideration of all I have seen and read on the subject, I am led to the belief that Croup depends in all instances on an irritation of the lining membrane of the Larynx, amounting after a longer or shorter time, if not arrested, to inflammation and occasionally giving rise to spasmodic contractions of its muscles.

That this is a correct view of the nature of the case may be inferred from an analysis of all the symptoms, as well as from the analogy existing between this and other diseases of irritation. That inflammation does not exist in all cases we have the proof in the suddenness of the attack and



of the relief afforded by a few remedies of no great power and which will be mentioned hereafter and that spasm of the laryngeal muscles is not alone to be regarded as the cause of the symptoms, any one will be convinced who reflects that except through the agency of the will these muscles like all those covering other parts of the same membrane are seldom brought into action, except from the irritation of the mucous surface beneath them.

For all our present purposes Croup may be divided into two species, the first consisting of all those cases in which the disease depends on irritation of the lining membrane, and the second of





those in which inflammation has supervened. Thus the cases which are suddenly produced appear to consist in simple irritation of the mucous lining of the Larynx, extending to and producing spasm of its muscles. This has at times been so violent as to close the rima glottidis and destroy the patient by suffocation; But this is not common and we find after a short time inflammation of the lining membrane taking place, constituting the second species of the disease, accompanied by a secretion of mucus, pus or coagulable lymph, according to the intensity of the inflammation and temperament of the patient. From the last of these (coagu-



-lable lymph) an adventitious membrane is formed, lining the whole internal surface of the organ and extending together with the inflammation along the internal surface of the Trachea and sometimes involving the Lungs.

The Barking noise which accompanies and indeed characterizes Croup and the difficulty of breathing may I think in many instances be attributed to spasm of the laryngeal muscles, but the same symptoms are often produced by a thickening of the mucous membrane from inflammation independant of spasm, and also from the presence of the adventitious membrane. The appearances on dissection go to confirm this view of the



nature of Croup. In cases which have terminated suddenly no morbid appearances are discovered. But when it has continued for a few days or even less the usual signs of inflammation are met with in the Larynx and generally in the trachea. There is also found in the Larynx and Trachea a quantity of thick matter resembling mucus and where the disease has been violent an adventitious membrane, as has been before observed.

The causes of Croup are those of the phlegmasia generally, particularly cold and damp air. Dr. Scwces, in his Chapter on Croup, (Diseases of Children) says that exposure to the weather is not necessary to its production, for, he observes, "we have often witnessed attacks of the disease from the mere



prevalence of a North-East wind, and  
 where in consequence of this wind  
 every precaution has been taken to  
 guard against its influence by con-  
 fining the child and keeping it  
 warm.

A stomach loaded with acrid  
 ingesta is said by Dr. Chapman  
 to be a very fruitful source of  
 the disease, and here, I might remark,  
 we can assign a reason why Croup is sel-  
 dom met with previous to weaning, the  
 child being nourished by the bland  
 substance provided for its support with-  
 out any irritation of its tender stomach.

Catarrh, as is acknowledged by almost  
 every writer, is sometimes complicated  
 with this disease. Nor is the circum-  
 stance difficult of explanation, for  
 the inflammation which constitutes







catarrh may readily be understood to extend into the Larynx and give rise to the symptoms characteristic of Croup. The disease also occasionally accompanies the Small Pox, Measles, Scarlatina, Aphthous sore throat and in some instances is accompanied by unequivocal signs of Gastritis. In all these, except the last, the Pharynx being inflamed, the inflammation extends to the Larynx. In all these cases however we only discover complications so commonly found in all diseases and they cannot in the least incline us to the supposition that the nature of Croup is different in such instances from what it is when simple and uncomplicated. Owing to Croup accompanying these



diseases it was formerly divided into Idiopathic and Symptomatic, but as all these causes tend to the same end, namely, irritation of the lining membrane of the Larynx, and as we cannot under any pretence suppose that Croup can be a symptom of any other disease, but must in all instances be a disease of itself, sometimes existing alone, at other times complicated with other affections, but in all cases marked by its own peculiar symptoms, and demanding its proper treatment we are led to the conclusion that the distinction is neither pathologically correct nor practically important.

Whatever may be the difference of opinion with respect to the pathology



of Group physicians pretty nearly agree in the most important point namely its treatment.

Called to a base in the course of commencement an emetic will sometimes check its progress. In those cases which arise from ingesta, they are useful in getting rid of offensive matters and in all cases they tend to restore an equable circulation. It is well known that impressions made on the stomach are felt by the whole system and the flow of blood and vital action are diverted from the seat of the disease to the organ acted on and secondarily to the skin.

Contributing to the same end the warm bath may, if necessary be employed. In relaxing spasm



this is one of the most important remedies that can be adopted, and by determining the vital action to the skin it may act as a revulsive and thus contribute to relieve the irritation of the Larynx. Spirits of Turpentine or a Mustard Cataplasm may also be applied to the throat.

But the disease resisting all these remedies, recourse must be had to others and first to Bloodletting. Of the efficacy of venesection in all spasmodic and inflammatory diseases, no one at the present day doubts, and in Croup it is particularly required. In its employment we have no other guide than a subsidence of the distressing symptoms. It is some-







times even necessary to almost drain the system before its full effect is obtained. This is particularly the case when the inflammatory action is established. When sparingly employed the action is not subdued, but only abated, while at the same time there is an expenditure of blood without profiting the patient, and he will not so readily bear the lancet the second time which will sooner or later become necessary. This practice is recommended by nearly all who are conversant with the disease.

After venesection has been carried to the extent I have mentioned and the unpleasant symptoms continuing, there is good rea-



now to believe that the inflammatory action is completely established. The course may now be had to topical depletion by cups to the back of the neck, and leeches to the throat.

To the last of these objections have been made, but when we consider their immense utility in abating local inflammation in other parts, when preceded by copious venesection, I think we can hardly abandon their use. They seem to unload the vessels of the part of that state of congestion "without which," as has been justly observed, "inflammation cannot take place." They should not however be used before or as a substitute for general bleeding for unless the system be pro-



-perly reduced they might only tend to increase the disease, by inviting a flow of blood to the part, by their irritations. Their want of success, in some cases in which they have been tried, is perhaps owing to this circumstance. At this conjuncture the application of a blister might probably prove serviceable.

By the preceding treatment the violent symptoms of Croup are generally subdued, and it is necessary to pay some attention to the state of the bowels. These are generally in a torpid state, and a purge becomes necessary. Calomel either alone or combined with Rhubarb or Jalap may be administered. The importance of



this practice is very great; by it we do away the disposition to inflammation, first by inviting the flow of blood and irritation from the Larynx to the intestinal surface, and secondly by the depletion they occasion from those parts.

In most cases Croup leaves behind it a slight cough and hoarseness which are best relieved by the use of expectorants. By Dr Archer of Maryland the Polygala Senega has been much recommended, but more, I believe, may be expected from this ~~medicine~~ in combination with the Squill and Tartar Emetic in the form of the Compound Symp of Squill of the Dispensatory. This





was first introduced by Dr. Byce, and to him we are indebted for the formula. Its value was soon appreciated by other members of the profession, and at the present time it is a very popular remedy in domestic practice, so much so that there are few mothers, whose children are affected with this disease, who do not only resort to it to break up the remains of an attack, but often by its timely administration ward off an attack.

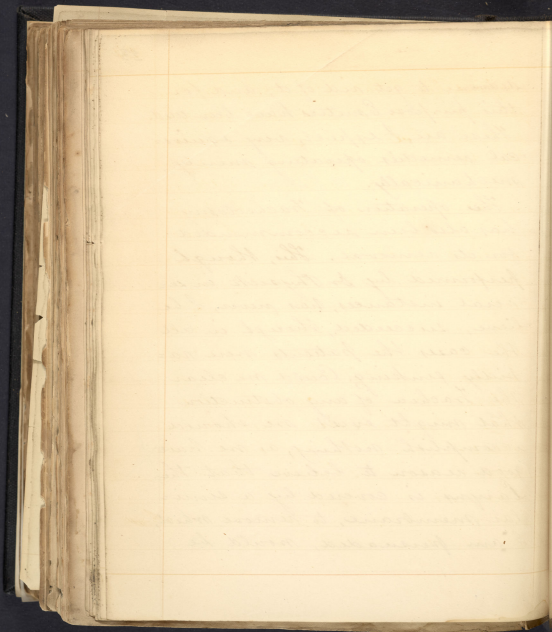
I have now described the treatment of Croup as it usually presents itself but should the inflammation run on to the formation of a membrane we are advised in addition to the usual remedies to en-



deavour to get rid of it; and for this purpose Emetics have been used.

These are, I expect, very equivocal remedies operating merely mechanically.

The operation of Tracheotomy has also been recommended for its removal. This, though performed by Dr Physick in several instances, has never, I believe, succeeded, though in all the cases the patients were rapidly sinking. Could we clear the Trachea of any obstruction that might exist we should accomplish nothing, as we have good reason to believe that the Larynx is covered by a similar membrane, to remove which, I am persuaded, would be



impossible. But admitting we could  
get rid of the membrane we would  
not, by ~~that~~ means, overcome  
the action that produced it, and  
in such an emergency, little ex-  
pectation of a recovery is to be loo-  
-ked for; and I should be more  
content with keeping the pa-  
-tient in the best position for  
breathing, and endeavouring to  
overcome any spasmodic or  
inflammatory action that  
might exist.

When Croup is complicated  
with other diseases, these demand  
attention and the remedies pro-  
-per for them should be had  
recourse to, at the same time  
we should endeavour to remove  
the affection of the Larynx.





I have now finished an account of my views with respect to the nature of Croup. Though hastily and imperfectly drawn up they have not been adopted without due consideration of the subject. 'Tis from the observations of others I have deduced them consequently they are in a great measure theoretical and I am ready to yield them to the lessons of experience.

